

NEW SYNONYMY IN ORIENTAL CULICIDAE.

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For the past two years the writer has studied the Oriental CULICIDAE at intervals, with a view to preparing a tabular synopsis of the species. During this time it has become evident that a large number of names will have to be rejected or changed in some way, and it seems desirable to call attention at once to some of these proposed changes, as it will inevitably be a considerable time before the thorough revision of the Oriental mosquitos which the writer has in view can be published. The present paper is intended merely to deal with nomenclatorial questions, points of systematic interest being introduced only in so far as they are necessary to explain or justify the writer's conclusions. The classification here indicated may be taken as approximately final, but the limits of certain genera and their arrangement may ultimately require modification, while their number may not improbably have to be reduced. Over 80 specific names are here for the first time definitely sunk, while the probable synonymy of 8 or 10 others is suggested. On the other hand two new names are proposed owing to the preoccupation of the original designation of the species.

Subfam. 1. CULICINAE.

Tribe 1. Anophelini.

So much systematic work has already been done on Oriental *Anopheles*, that comparatively few questions of nomenclature remain undecided, but the following synonymies appear so far to have escaped the notice* of writers on this group:—

1. *Anopheles tessellatus*, Theo.

Anopheles tessellatum, Theo., Mon. Cul. i, p. 175 (1901).

Anopheles punctulatus, Theo. (*nec* Dönitz), *l.c.*

Anopheles deceptor, Dönitz, Zeit. für Hygiene und Infect., xli, p. 60 (1902).

Myzomyia thorntoni, Ludlow, Can. Ent. xxxvi, p. 69 (1904).

Dactylomyia ceylonica, Newst. & Cart., Ann. Trop. Med. iv, p. 377 (1910).

This is a purely Oriental mosquito; it is represented, however, in the Australasian region by the closely allied *A. punctulatus*, Dön. I have compared a specimen of *M. thorntoni* named by Dr. Ludlow with Dönitz's description and figure of *A. deceptor* and with Theobald's type of *A. tessellatum*, and find that there is no room for doubt as to their identity. *Dactylomyia ceylonica* is supposed to possess a "cylindrical-shaped tubercle or finger-like process projecting obliquely from the prothoracic region," but this is probably a purely accidental appearance, and though I have not examined the type I should conjecture that it is formed by scales on the front margin of the mesonotum. The description of *D. ceylonica* gives no other character by which it might be distinguished from *A. tessellatus*, and as the British Museum possesses a specimen of this species from

* Since this was written Dr. A. T. Stanton (Bull. Ent. Res. iv, 1913, p. 129), has given *A. deceptor* and *D. ceylonica* as synonyms of *A. tessellatus*.

Ceylon the synonymy is in the highest degree probable. Stanton has recently stated (*J. Lond. Sch. Trop. Med.*, ii, 1912, p. 6) that James and Liston's *Nyssomyzomyia punctulata* is also the same as *A. tessellatus*.

2. *Anopheles kochi*, Dönitz.

Anopheles kochi, Dönitz, *Insecten-Börse*, xviii, p. 1 (1901).

Cellia flava, Ludlow, *Can. Ent.* xl, p. 32 (1908).

Specimens named by Dr. Ludlow have recently been received, and on comparison with the British Museum series proved to be normal *A. kochi*. James' *Christophersia halli* is already recognised as a synonym of this species.

2a. *Anopheles christophersi*, Theo.

Anopheles christophersi, Theo., *Proc. R. Soc.* lxi, p. 378 (1902).

Myzomyia mangyana, Banks, *Phil. J. Sci.* i, p. 991 (1906).

Myzomyia funesta, Ludlow (*nec* Giles), *Can. Ent.* xxxvii, p. 135 (1905).

Theobald described the female palpi of *A. christophersi*, as having "two broad apical white bands and a narrow one near the base," and an examination of the type shows that this is perfectly correct, and that the species is quite distinct from *A. listoni*, Liston; on the other hand it is evidently the same as *M. mangyana*, Banks, which is represented in the British Museum by a female cotype. I have recently had an opportunity of examining some specimens from the Philippine Islands named *Myzomyia funesta* by Miss Ludlow. These are in reality *A. christophersi*, and it may therefore be presumed that *A. funestus* is not known from that region.

Tribe 2. Megarhinini.

TOXORHYNCHITES, Theo.

Mon. Cul. i, p. 244 (1901).

3. *Toxorhynchites immisericors*, Walk.

Megarhinus immisericors, Walker, *Proc. Linn. Soc. London*, iv, p. 90 (1860).

Megarhinus gilesi, Theo., *Mon. Cul.* i, p. 227 (1901).

Toxorhynchites argenteotarsis, Ludlow, *Can. Ent.* xxxviii, p. 367 (1906).

Worcesteria grata, Banks, *Phil. J. Sci.*, i, p. 779 (1906).

(?) *Megarhinus subulifer*, Dol., *Nat. Tijd. Ned. Ind.* xiv, p. 382 (1857).

This is a variable species, but the variation seems to me to be quite continuous; it is noticeable chiefly in the amount of white on the mid tarsi of the female and in the markings of the underside of the abdomen. The cross-veins also are very variable. There is no evidence to show that the palpal differences given by Theobald between *immisericors* and *gilesi* are really specific, nor can any other constant difference between them be discovered. I have not examined a specimen of *T. argenteotarsis*, but the description is quite full enough to warrant the assumption that it is only a form of *T. immisericors*. A male of *W. grata*, named by Banks, is in the British Museum, and I have therefore been able to

ascertain with certainty its identity with *T. immisericors*. There is nothing in Doleschall's inadequate description of *M. subulifer* to separate it from *T. immisericors*, and if this species is found to occur in Amboina the older name *subulifer* will have to be used for it. Doleschall, however, described quite a different species (*M. amboinensis*) which he afterwards considered to be the male of his *M. subulifer*; if his opinion was correct, *M. subulifer* is distinct from *T. immisericors*, and on account of this possibility the name under which this species is now widely known is retained for the present.

4. *Toxorhynchites quasiferox* (Leic.).

Teromyia quasiferox, Leic., Cul. of Malaya,* p. 51 (1908).

Toxorhynchites javaensis, Theo., Tijds. v. Ent. liv, p. 233 (1911).

If Theobald had seen Leicester's work he could hardly have failed to recognise that he was redescribing *T. quasiferox*. The only difference discoverable in the descriptions is doubtless due either to slight inaccuracy in Theobald's observations, or to fading after death. The caudal tuft of *T. javaensis* is described as follows: "apical segment with a dense tuft of bright orange chaetae, some short black ones at the sides of the previous one and some orange ones on the next." In *T. quasiferox* the black hairs on the penultimate segment are quite as long as the orange ones, and there are orange hairs at the base of this segment, not on the apex of the sixth. The basal abdominal segments of the British Museum specimens of *T. quasiferox* have faded to an "apple-green" as in *T. javaensis*. There are a number of small but constant differences (*e.g.* the white tip to the front tibiae), which need not be here enumerated, between this species and *T. immisericors*.

5. *Toxorhynchites magnificus* (Leic.).

Teromyia magnificus, Leic., Cul. of Malaya, p. 54 (1908).

Teromyia funestus, Leic., Cul. of Malaya, p. 58 (1908).

An examination of the type male of *T. funestus*, presented by Dr. Leicester to the British Museum, shows that his description was slightly inaccurate. According to this description "all the legs [apart from the coxae, are] brilliant purple, the only attempt at banding being an imperfect band on the first [*i.e.* second] tarsal joint of the hind legs." In the type there are however distinct traces of white marks on the under sides of the hind tibia and metatarsus in exactly the same positions as in *T. magnificus*. In addition to this, the scales of the mesonotum and first abdominal segment now appear coppery and not greenish, but this is doubtless due to *post mortem* changes; all the specimens of *T. magnificus* have these scales metallic greenish, as described both for this species and for *T. funestus*. I therefore conclude that the specimen described as *T. funestus* is really only a dark form of *T. magnificus*. The commencement of the caudal tuft is white in both.

* In : Studies from Institute for Medical Research, Federated Malay States, Vol. 3, Part 3. Throughout this paper Leicester's work is quoted as above for the sake of brevity.

Tribe 3. **Culicini.**(a) *Aedes Group.***PARDOMYIA, Theo.**

Mon. Cul. iv, p. 280 (1907).

6. **Pardomyia aurantia, Theo.***Pardomyia aurantia*, Theo., Mon. Cul. iv, p. 280 (1907).*Ekrinomyia aureostriata*, Leic., Cul. of Malaya, p. 71 (1908).

In Dr. Leicester's collection in the British Museum are 3 ♂ and 4 ♀ cotypes of *E. aureostriata*; the females agree exactly with the type of *P. aurantia*. This genus closely resembles *Mucidus* except in the scaling and the shorter female palpi.

MUCIDUS, Theo.

Mon. Cul. i, p. 268 (1901).

7. **Mucidus laniger (Wied.).***Culex laniger*, Wied., Dipt. Exot. i, p. 9 (1821).*Mucidus mucidus*, Leic. (*nec* Karsch), Cul. of Malaya, p. 69 (1908).

This much resembles the true *M. mucidus*, but the second joint of the hind tarsi is entirely brown, instead of being white with a brown tip.

ARMIGERES, Theo.

Mon. Cul. i, p. 322 (1901).

Desvoidya, Blanch., C. R. Soc. Biol. liii, p. 1046 (1901).*Desvoidea*, Theo., Mon. Cul. iii, p. 134 (1903).*Blanchardiomyia*, Brun., Rec. Ind. Mus. iv, p. 440 (1912).

Although the name *Armigeres* appears to be meaningless, there seems no reason why it should not be used, as there is no risk of confusion with *Armiger*, which is not the same word. Blanchard's *Desvoidya*, on the other hand, is preoccupied by *Desvoidia* (Meade, 1892), and on this account Brunetti proposed the name *Blanchardiomyia* for the present genus. It is interesting to notice how an error committed by one author becomes perpetuated. Theobald first spelt Blanchard's name wrongly (as above); later when compiling his fascicle of the "Genera Insectorum" he relies on his previous work, and, noticing the error in spelling, attributes it to Blanchard instead of to himself; Brunetti subsequently copies this inaccurate statement. This genus is regarded (for the present at least) as distinct from *Stegomyia*, owing to the peculiar structure of the larvae and of the male genitalia. I can discover no definite character, however, by which the female adults can be distinguished from *Stegomyia*, *Ochlerotatus*, or *Aedes*.

8. *Armigeres joloensis* (Ludlow).

Desvoidea fusca var. *joloensis* Ludlow, Can. Ent. xxxvi, p. 236 (1904).

Desvoidya jugraensis, Leic., Cul. of Malaya, p. 77 (1908).

Desvoidya joloensis, Theo., Mon. Cul. v, p. 143 (1910).

As Theobald suggests, this is not a variety of *A. fuscus*, but a distinct species. (It may be mentioned in passing that *A. fuscus* is also distinct by genital characters from *A. obturbans*). Ludlow's and Leicester's descriptions agree very well; Dr. Leicester at the time of writing was evidently unacquainted with Dr. Ludlow's existing description. There is a good series of the species in the British Museum.

9. *Armigeres apicalis* (Theo.).

Desvoidya apicalis, Theo., Rec. Ind. Mus. iv, p. 5 (1910).

Stegomyia crassipes, Theo. (*nec* Wulp), Mon. Cul. i, p. 320 (1901).

This is undoubtedly an *Armigeres*, although "general appearance" is the only guide in separating females of this genus from *Stegomyia*. Whatever Van der Wulp's *Culex crassipes* may be, it is almost certainly not this species. I have compared the Indian Museum type of *D. apicalis* with Theobald's specimens of *S. crassipes*.

STEGOMYIA, Theo.

Mon. Cul. i, p. 283 (1901).

10. *Stegomyia desmotes*, Giles.

Stegomyia desmotes, Giles, J. Trop. Med. vii, p. 367 (1904).

Stegomyia gracilis, Leic., Cul. of Malaya, p. 81 (1908).

Stegomyia albipes, Theo., Rec. Ind. Mus. iv, p. 11 (1910).

The type of *S. desmotes* is in bad condition, but is quite recognisable by the peculiar leg-markings, the only species at all resembling it in this respect being *S. sagens*. I have not seen the type of *S. albipes*; the description only disagrees with *S. desmotes* in that the claws of the female are described as being all simple. Since the structure of the female claws is occasionally subject to variation, no notice need be taken of this difference, even if Theobald's observation was correct.

11. *Stegomyia w-alba*, Theo.

Stegomyia w-alba, Theo., Ann. Mus. Nat. Hung. iii, p. 74 (1905).

Stegomyia imitator, Leic., Cul. of Malaya, p. 89 (1908).

Stegomyia minutissima, Theo., Rec. Ind. Mus. iv, p. 9 (1910).

There are some slight differences between the specimens which have been described under the above names, which I consider should not without strong evidence be regarded as of specific value. These differences are as follows: *S. w-alba* has the basal scutellar scales black, the apical ones white; *S. imitator* has the scutellar scales all white; *S. minutissima* has the scutellar scales black, some white ones occurring on the lateral lobes, and it also has the white markings

of the thorax less extensive than in the other two. I have seen only a single female of *S. imitator*, and have not examined the type of *S. minutissima*, but support is lent to the view here expressed by the fact that neither Leicester nor Theobald suggested differences between their species and *S. w-alba*. I have examined the type of *S. w-alba* among others which were kindly lent me by Dr. Kertész from the Buda-pest Museum.

12. *Stegomyia trilineata* (Leic.).

Hulecoetomyia trilineata, Leic., Entom. xxxvii, p. 163 (1904).

Howardina chrysolineata, Theo., Mon. Cul. iv, p. 218 (1907).

I have carefully compared the types and find that they are indistinguishable specifically. The palpi of the male are thin, upwardly-curved and practically devoid of hair-tufts, hence I include the species in *Stegomyia*. Some species of *Ochlerotatus* (e.g., *O. pseudotaeniatus*, Giles, and *O. gubernatoris*, Giles) have the male palpi only just perceptibly swollen apically, but these species have the apical joints bent downwards and provided with distinct hair-tufts, which justifies their inclusion in *Ochlerotatus*. The two genera, as has already been suggested, are very close, and a doubt may again be expressed as to whether the wisest course to take with regard to them may not be that adopted by Dyar and Knab of sinking both under *Aedes*.

OCHLEROTATUS, Arrib.

Rev. Mus. La Plata, ii, p. 143 (1891).

13. *Ochlerotatus gubernatoris* (Giles).

Culex gubernatoris, Giles, J. Bombay Nat. His. Soc. xiii, p. 607 (May 1901).

Culex gubernatorius, Giles, Entom., xxxiv, p. 194 (July 1901).

Finlaya melanoptera, Giles, J. Trop. Med. vii, p. 367 (1904).

Lepidotomyia magna, Theo., Gen. Ins., Cul. p. 22 (1905).

Pseudocarrollia lophoventralis, Theo., Rec. Ind. Mus. iv, p. 12 (1910).

Giles' type of *C. gubernatoris* is in the British Museum, and though damaged, is quite recognisable. His figure of the species (Gnats, Ed. ii, pl. 14, f. 7) is inaccurate, as the white markings on the front of the thorax are of an altogether different shape. *Lepidotomyia magna* differs from the type of *O. gubernatoris* in the greater breadth of the white rings on the middle legs, but an examination of a series of specimens shows that this is a mere individual variation, as might be expected. Through the courtesy of Dr. Annandale and Mr. Gravely of the Indian Museum, I have been able to examine the type of *P. lophoventralis*, and find that without the least doubt it is simply a specimen of *O. gubernatoris*, in which the scales on the under side of the abdomen are rubbed up the wrong way, so as give a tufted appearance. This is still more the case with the type of *F. melanoptera* which has the tufts quite as well marked as in Giles' figure. This specimen, however, exactly resembles *O. gubernatoris* in all other respects, and so the long scales figured by Giles must either be regarded as an abnormality, or they may be normally present in a horizontal position, where they would be very difficult to see, especially if covered by other scales.

14. *Ochlerotatus niveus* (Ludlow).

Stegomyia nivea, Ludlow, J.N.Y. Ent. Soc. xi, p. 139 (1903).

Stegomyia pseudonivea, Theo., Ann. Mus. Nat. Hung. iii, p. 75 (1905).

S. pseudonivea was supposed to be distinguished from *S. nivea* "by the fore and mid ungues [of the female] being uniserrated and not simple, and by the femora being dark above, not white as in *nivea*." An examination of specimens shows that the teeth on the claws are very minute, and may easily have been overlooked by Miss Ludlow, apart from the fact that they may be variable in this species as in a few others. The description of *S. nivea* only states that the *hind* femora are white dorsally on the *basal two-thirds*, and as this is also the case in all the specimens of *S. pseudonivea* in the British Museum, there can be no reasonable doubt about the synonymy given above.

15. *Ochlerotatus taeniorhynchoides* (Chris.).

Leslieomyia taeniorhynchoides, Chris., Paludism, no. 2, p. 68 (1911).

Pecomymia maculata, Theo. (*nec* Meigen), J. Econ. Biol. i, p. 24 (1905).

Meigen's *Culex maculatus* is an *Ochlerotatus*, and therefore Theobald's name is not available for this species. There are two slight discrepancies in the descriptions of Theobald and Christophers: (1) Theobald states that there are both "flat" and "narrow-curved" scales on each lobe of the scutellum, while Christophers says the middle lobe has "narrow-curved," the lateral ones "flat" scales. Very likely the scaling of the scutellum is variable, but I find on examination that there are really no flat scales on the middle lobe of the scutellum of Theobald's specimens. (2) Theobald describes the hind claws of the male as unequal, while Christophers says they are equal; also, according to Theobald the larger claws of the fore and mid legs of the male are unindentate, according to Christophers bidentate. In this case Theobald's observations are certainly correct for his specimen, so that unless this is another case of variation in the claws, the two species may possibly be distinct. If that can be proved to be the case Theobald's species will require renaming, but for the present it is deemed better to regard it as synonymous with *O. taeniorhynchoides*.

16. *Ochlerotatus pipersalatus* (Giles).

Stegomyia pipersalata, Giles, Gnats, Ed. ii, p. 372 (1902) (♀ only).

Pseudograbhamia maculata, Theo., J. Bomb. Nat. Hist. Soc., xvi, p. 244 (1905).

Giles' description was a composite one, as the male and female types belong to quite different species. The male type differs from the female in all the points mentioned by Giles, but, apart from this, it has no obvious intermingling of black and white scales on the wings and legs, which Giles rightly regarded as of considerable taxonomic importance; his figure must represent a female and not a male wing. I have therefore chosen to restrict the name to the female type; the male will subsequently be redescribed and renamed. There is no doubt at all that Theobald's *Pseudograbhamia maculata* (known in both sexes) is the same species. *O. pipersalatus* much resembles *O. taeniorhynchoides*, but the scaling of the scutellum and the coloration of the thorax are quite different.

17. *Ochlerotatus imprimens* (Walk.).

Culex imprimens, Walk., Proc. Linn. Soc. v, p. 144 (1861).

(?) *Culex auratus*, Leic., Cul. of Malaya, p. 153 (1908).

Culicada suknaensis, Theo., Rec. Ind. Mus. iv, p. 21 (1910).

Walker's type, though damaged, is not by any means past recognition. Leicester's *C. auratus* is probably the same species, but as I have seen no specimen I only include it here provisionally. In any case Leicester's name is preoccupied by *Aedes* (*Ochlerotatus*) *auratus*, Grabham (1906).

18. *Ochlerotatus stenoetrus* (Theo.).

Culex stenoetrus, Theo., Mon. Cul. iv, p. 395 (1907).

Culicada minuta, Theo., Mon. Cul. iv, p. 338 (1907).

Culicada eruthrosops, Theo., Mon. Cul. v, p. 299 (1910).

Culex pseudostenoetrus, Theo., Mon. Cul. v, p. 343 (1910).

There are some very slight differences between the above-mentioned forms, notably in the colour of the thoracic scaling, but nothing sufficient to distinguish them specifically. *C. pseudostenoetrus* is said by Theobald to differ from *C. stenoetrus* in having no pale apex to the palpi, and in the venation, but this is not true; even the type of *C. pseudostenoetrus* has a pale apex to the palpi, and the venation is quite similar to that of *C. stenoetrus*. *C. minuta* has a somewhat distinct appearance and a noticeably paler thorax, but can, I think, be included here with safety; otherwise it will require renaming, as the African *O. minutus* (Theo.) was described earlier.

19. *Ochlerotatus pulchriventer* (Giles).

Culex pulchriventer, Giles, J. Bomb. Nat. Hist. Soc. xiii, p. 608 (1901).

Howardina himalayana, Giles, J. Trop. Med. vii, p. 384 (1904).

Both types are in the British Museum, and are evidently conspecific.

20. *Ochlerotatus pallidostriatus* (Theo.).

Culex pallidostriatus, Theo., Mon. Cul. iv, p. 410 (1907).

Culex parascelos, Theo., Rec. Ind. Mus. iv, p. 18 (1910).

Ochlerotatus ochraceus, Edw. (part), Bull. Ent. Res. ii, p. 250 (1911).

This species can be distinguished by the male genital characters from *O. ochraceus*, which appears to be confined to the Ethiopian region, as this is to the Oriental.

21. *Ochlerotatus mediolineatus* (Theo.).

Culex mediolineatus, Theo., Mon. Cul. ii, p. 113 (1901).

Culex trilineatus, Theo., Mon. Cul. ii, p. 105 (1901).

Types compared, leaving no room for doubt as to the synonymy.

22. *Ochlerotatus ostentatio* (Leic.).

Aioretomyia ostentatio, Leic., Cul. of Malaya, p. 193 (1908).

Pseudohowardina chrysoseuta, Theo., Mon. Cul. v, p. 228 (1910).

The male of this species being unknown, its location in *Ochlerotatus* rather than in *Aedes* is purely a matter of conjecture.

AËDES, Mg.

Syst. Besch. i, p. 13 (1818).

Skusea, Theo., Mon. Cul. iii, p. 291 (1903) (type *funerea*, Theo.).*Verrallina*, Theo., Mon. Cul. iii, p. 295 (1903) (type *butleri*, Theo.)*Neomacleaya*, Theo., Mon. Cul. iv, p. 238 (1907).*Aioretomyia*, Leic., Cul. of Malaya, p. 185 (1908).

In the case of the first two synonyms quoted, Theobald gave no type species ; they are here designated for the first time, the species being chosen which seems most likely to be the one on which Theobald based his conception of the genus. In each case some or all of the other species originally included are now recognised as belonging to different genera. The only one of the above "genera" which has the least claim to a separate existence is *Skusea*, which differs from typical *Aëdes* in having simple claws in the female. As in all other respects it is a true *Aëdes*, I hardly consider it entitled to subgeneric rank. Apart from the shortness of the male palpi, there seems to be some similarity between the members of the restricted genus *Aëdes* in general appearance and in the male genitalia, which are somewhat different from the usual *Ochlerotatus* type.

23. *Aëdes indicus* (Theo.).*Neomacleaya indica*, Theo., Mon. Cul. iv, p. 238 (1907).*Skusea mediofasciata*, Theo., Mon. Cul. iv, p. 544 (1907).*Pseudoskusea nigratarsis*, Ludlow, Can. Ent. xl, p. 52 (1908).*Pseudoskusea mediolineata*, Ludlow, Can. Ent. xl, p. 332 (1908).

The male being unknown, the position of this species in *Aëdes* is only presumptive. The types of *N. indica* and *S. mediofasciata* are precisely similar, and were both taken by the same collector, probably at the same place and time (they both bear the number 27). *P. nigratarsis* was suspected by its describer to be the same as *S. mediofasciata* ; "*P. mediolineata*" was apparently a mere *lapsus calami* for *P. nigratarsis*.

24. *Aëdes butleri*, Theo., Mon. Cul. ii, p. 230 (1901).*Verrallina butleri*, Theo., Mon. Cul. iii, p. 295 (1903).*Skusea diurna*, Theo., Entom., xxxvi, p. 259 (1903).*Stegomyia hatiensis*, Carter, Entom., xliii, p. 275 (1910).

The fore and mid claws in the type of *S. diurna* are distinctly toothed, not simple as Theobald states, and it is obviously the same as *Aëdes butleri*, which is very common in the Malay States. *S. hatiensis* is also undoubtedly the same, though it was described from very much damaged specimens.

25. *Aëdes uncus* (Theo.).*Culex uncus*, Theo., Mon. Cul. ii, p. 53 (1901).(?) *Neomacleaya indica*, var. *simplex*, Theo., Rec. Ind. Mus. ii, p. 291 (1908).(?) *Verrallina malayi*, Leic., Cul. of Malaya, p. 198 (1908).

As in most other species of this genus, the head is clothed mainly with flat scales. This is quite obvious in the type of *C. uncus*, which was wrongly

described by Theobald in this respect. *V. malayi* is, I believe, the same, but there are some slight differences in wing scaling. The name *malayi* had in any case best be dropped, to avoid confusion with *Aedes malayi*, Leic. (which is a *Micraedes*, near, if not identical with *M. nigrescens* (Theo.)). Two males in Dr. Leicester's collection seem to have been undescribed by him, and are apparently assignable to this species.

26. *Aedes fragilis* (Leic.).

Verrallina fragilis, Leic., Cul. of Malaya, p. 199 (1908).

Verrallina indecorabilis, Leic., Cul. of Malaya, p. 200 (1908).

The above synonymy is given as highly probable, but it is not absolutely certain, owing to the unfortunate fact that the specimens, in common with most of those in Dr. Leicester's collection, were unnamed when received at the British Museum; those which Dr. Leicester intended for type specimens merely bore a number (in addition to details as to capture), the significance of which is now lost. Types Nos. 54 and 55 however are almost certainly *V. fragilis* and *V. indecorabilis*. They at first sight differ considerably in the male genitalia, but on mounting these structures I found that the apparent difference was due to one specimen having lost its elaspers. Descriptions of male genitalia are in any case inadequate, and if made from the dry specimen are apt to be very misleading, as I have found in studying the other species of *Aedes* described by Dr. Leicester.

(b) *Taeniorhynchus* Group.

TAENIORHYNCHUS, Arrib.

Rev. Mus. La Plata, ii, p. 147 (1891).

27. *Taeniorhynchus brevicellulus*, Theo.

Taeniorhynchus brevicellulus, Theo., Mon. Cul. ii, p. 212 (1901).

Taeniorhynchus acer, Theo. (*nec* Walk.), Mon. Cul. ii, p. 211 (1901).

Chrysoconops pygmaeus, Theo., Rec. Ind. Mus. ii, p. 300 (1908).

Chrysoconops fuscopteron, Theo., Tijd. v. Ent. liv, p. 239 (1911).

This species seems to be subject to considerable variation, especially in the colour of the abdominal scales, some specimens having distinct purplish apical bands on each segment, while in others the abdomen is almost entirely yellow. I believe, however, that this variation is only individual. The species is a true *Taeniorhynchus*. Walker's type of *C. acer* is unrecognisable, but is certainly not a *Taeniorhynchus*.

MANSONIOIDES, Theo.

Mon. Cul. iv, p. 498 (1907).

28. *Mansonioides annuliferus*, Theo.

Panoplites annulifera, Theo., Mon. Cul. ii, p. 183 (1901).

Mansonia septempunctata, Theo., Ann. Mus. Nat. Hung. iii, p. 187 (1905).

Mansonioides septemguttata, Theo., Mon. Cul. iv, p. 499 (1907).

The types of *P. annulifera* and *M. septemguttata* belong indubitably to the same species. I have not seen the type of *M. septempunctata*, but there can be very little doubt that it is also the same.

(c) *Culex* Group.

CULEX, L.

Syst. Nat. Ed. x (1758).

29. *Culex bitaeniorhynchus*, Giles.

Culex bitaeniorhynchus, Giles, J. Bomb. Nat. Hist. Soc. xiii, p. 607 (May 1901).

Taeniorhynchus ager, Giles, Entom. xxxiv, p. 196 (July 1901).

Taeniorhynchus tenax, Theo., Mon. Col. ii, p. 198 (Nov. 1901).

Culex infula, Theo., Mon. Cul. i, p. 270 (Nov. 1901).

Grabhamia ambigua, Theo., Mon. Cul. iii, p. 248 (1903).

Grabhamia taeniarostris, Theo., Mon. Cul. iv, p. 299 (1907).

Oculeomyia sarawaki, Theo., Mon. Cul. iv, p. 515 (1907).

(?) *Taeniorhynchus domesticus*, Leic., Cul. of Malaya, p. 169 (1908).

(?) *Culicelsa abdominalis*, Taylor, Rept. Austral. Inst. Trop. Med., 1911, p. 53 (1913).

Most of the above synonymy has already been given under *C. ager*, but is printed again now in confirmation. I have recently discovered that Giles originally described his species as *Culex bitaeniorhynchus*, so the name *ager* must unfortunately be rejected. The abdomen bears a very variable amount of yellow scaling, which is occasionally present at the bases as well as at the apices of some of the segments. Leicester's *T. domesticus* is included here as a variety, but further experience may show that it is entitled to specific rank; however, the name cannot coexist with the much earlier *Culex domesticus*, Germ. *T. domesticus*, Leic., is only distinguishable from typical *C. bitaeniorhynchus* by its much blacker thorax.

30. *Culex sinensis* (Theo.).

Culex gelidus, var. *sinensis*, Theo., Mon. Cul. iii, p. 180 (1903).

Leucomyia sinensis, Theo., Mon. Cul. v, p. 313 (1910).

Culex sepositus, Leic., Cul. of Malaya, p. 152 (1908).

Taeniorhynchus tenax, Leic. (*nec* Theo.), Cul. of Malaya, p. 167 (1908).

This is not, as I previously considered, a variety of the preceding, but is a distinct species. It differs principally from *C. bitaeniorhynchus* in the entire absence of any pale scales on the wing; in the other species the wing is always more or less mottled with light and dark scales. There are also other differences between the two, *e.g.*, in the scaling of the legs. The type of *C. sepositus* is lost, but Leicester's description is unmistakable.

31. *Culex epidesmus* (Theo.).

Taeniorhynchus epidesmus, Theo., Rec. Ind. Mus. iv, p. 22 (1910).

Taeniorhynchus luteoabdominalis, Theo., Rec. Ind. Mus. iv, p. 23 (1910).

Grabhamia ochracea, Theo., J. Econ. Biol. i, p. 35 (1905).

The name *ochraceus* is ineligible for this species, as Theobald had described a *Culex ochraceus* previously to his *Grabhamia ochracea*, and although the former species is now transferred to *Ochlerotatus*, its original location in *Culex* prevents

the subsequent use of the name for any other species of true *Culex*. This is a very striking species, and I have no doubt whatever concerning the synonymy. I have examined the Indian Museum type of *T. luteoabdominalis*, and find that Theobald's description is not quite correct. The legs of the type are somewhat rubbed, but do show traces of pale rings on the tarsi, such as are conspicuous in perfect specimens. The species is a true *Culex*, and is evidently related to *C. sinensis* and *C. bitaeniorhynchus*.

32. *Culex whitmorei* (Giles).

Taeniorhynchus whitmorei, Giles, J. Trop. Med. vii, p. 367 (1904).

Taeniorhynchus argenteus, Ludlow, Can. Ent. xxxvii, p. 98 (1905).

Leucomyia plegepennis, Theo., Mon. Cul. iv, p. 375 (1907).

Culex albus, Leic., Cul. of Malaya, p. 148 (1908).

The types of *T. whitmorei* and *L. plegepennis* are in good condition in the British Museum, which possesses a fairly good series of the species. Miss Ludlow has kindly presented some named specimens of *T. argenteus* to the Museum. Although I have not seen the type of *C. albus*, the species is so very distinct from all others that I have not the least hesitation in quoting the synonymy as above.

33. *Culex sitiens*, Wied.

Culex sitiens, Wied., Aussereur. zweifl. Ins. i, p. 543 (1828).

Culex impellens, Walk. (*nec* Theo.), Proc. Linn. Soc., iv, p. 91 (1860).

Culex annulirostris, Skuse, Proc. Linn. Soc. N. S. W., ser. 2, iii, p. 1737 (1889).

Culex microannulatus, Theo., Mon. Cul. i, p. 353 (1901).

Culex gnophodes, Theo., Mon. Cul. iii, p. 163 (1903).

Culex somaliensis, N.-L., Arch. Parasit. x, p. 254 (1906).

Culex ronaldi, Charm., Ann. Trop. Med. ii, p. 259 (1908).

Culex salus, Theo., Third Rep. Wellc. Lab., p. 256 (1909).

I have devoted considerable study to the small banded-proboscis species of *Culex*, and have come to the conclusion, after examining large series, that there are only three common Oriental species of this group, apart from such well-marked forms as those already referred to in this paper. Of these three species, *C. sitiens* may be recognised as follows: it is much blacker than the other two, and also somewhat larger; the scaling of the mesonotum is dark, but not uniform; the femora and tibiae have light and dark scales more or less intermixed; the first fork-cell in both sexes has its base slightly nearer the apex of the wing than that of the second; the long joint of the male palpi has a regular row of stiff translucent hairs projecting downwards and inwards. I have adopted the name *C. sitiens* for this species because Wiedemann's description fits it better than any other, while it certainly does not apply to the species which Theobald interprets as *C. sitiens*; Wiedemann gives the general colour as black, which would only apply to this species; moreover the size he gives would apply better to this than to either of the two following. Walker's type is of course in very bad condition and hardly recognisable, but I have included his *C. impellens* here because, contrary to Theobald's implication, the

first fork-cell in the type has its base slightly nearer the apex of the wing than that of the second. There are extremely slight colour differences between Oriental, Australian and African specimens, but as I find that the male genitalia are absolutely identical, I include *C. annulirostris*, *C. somaliensis* and *C. salus* as synonyms without any doubt. *C. gnophodes* and *C. microannulatus* are also evidently the same; Theobald's statement that the single specimen of *C. gnophodes* "can at once be told [from *C. microannulatus*] by the relative positions of the fork-cells and cross-veins, and by the abdominal banding and ornamentation" is quite erroneous, as there are certainly no such differences.

34. *Culex vishnui*, Theo.

Culex vishnui, Theo., Mon. Cul. i, p. 355 (1901) (♀ only).

Culex impellens, Theo. (*nec* Walk.), Mon. Cul. i, p. 362 (1901).

(?) *Culex microtaeniata*, Theo., Tijd. v. Ent., liv, p. 236 (1911).

(?) *Culex pseudoinflula*, Theo., Tijd. v. Ent., liv, p. 237 (1911).

(?) *Culex parvus*, Taylor, Bull. N. Terr. Austral., 1a, p. 27 (1912).

The chief distinguishing characters of this species are as follows: small, light brown in general appearance; scales of mesonotum light brown, but not uniformly so; femora and tibiae without any distinct intermingling of light and dark scales, but the latter (especially the middle pair) have a more or less evident pale lateral longitudinal stripe; bases of fork-cells almost level, or that of the first very slightly nearer the base of the wing than that of the second; male palpi with a row of hairs as in *C. sitiens*. The male genitalia are quite distinct from those of *C. sitiens* and also from those of *C. tritaeniorhynchus*, although they much resemble the last-named. *C. microtaeniata*, *C. pseudoinflula*, and *C. parvus* are included here as probable synonyms, as there is nothing in the descriptions which will definitely separate them from *C. vishnui*. I have not seen the types.

35. *Culex tritaeniorhynchus*, Giles.

Culex tritaeniorhynchus, Giles, J. Bomb. Nat. Hist. Soc. xiii, p. 606 (May 1901); id., Entom., xxxiv, p. 192 (July 1901).

Culex sitiens, Theo. (*nec* Wied.), Mon. Cul. i, p. 360 (Nov. 1901).

Culex annulus, Theo., Mon. Cul. i, p. 358 (Nov. 1901).

Culex vishnui, Theo., Mon. Cul. i, p. 356 (1901) (♂ only)

Culex biroï, Theo., Ann. Mus. Nat. Hung., iii, p. 82 (1905).

This species, though very much like the preceding, can readily be distinguished as follows: mesonotum clothed with dark brown scales, uniform in colour; scales of femora and tibiae dark brown (except on under side of former), no intermingling of light and dark scales, and no pale tibial stripe; base of first fork-cell in female distinctly nearer the base of the wing than that of the second, in the male the bases are about level; male palpi without the row of hairs found in the two species just dealt with. Although the hind tarsi have only faint pale rings, there is always some trace of these. The type (♀) of Giles' *C. tritaeniorhynchus* is in the British Museum, and serves to explain why this inappropriate name was given. Of the three bands on the proboscis described by Giles the one at the tip is really formed by the pale labella; the one near the base is merely due to some

scales being rubbed off. It is evidently the same species as Theobald's *C. annulus*, and from the description of *C. biroi* I should say there is no doubt that that is also the same. Theobald regarded some specimens as a distinct species (which he called *C. sitiens*) because he mistakenly supposed that there was no trace of "banding" on the hind tarsi; his description of the thoracic scales both of these specimens and of *C. annulus* is rather misleading, as the colouring is uniform over the greater part of the mesonotum. I have mounted the genitalia of the male type of *C. vishnui* and find them identical with those of other specimens of this species. The female specimen must be regarded as the type of *C. vishnui*, as Theobald gives it precedence.

36. *Culex halifaxii*, Theo.

Culex halifaxii, Theo., Mon. Cul. iii, p. 231 (1903).

Culex multimaculosus, Leic., Cul. of Malaya, p. 155 (1908).

I have compared the type of *C. halifaxii* with a series of Dr. Leicester's specimens of *C. multimaculosus*, and find they are the same. Apart from the difference in coloration between this species and *C. concolor*, there is a slight difference in the male genitalia, and also, according to Dr. Leicester, in the larvae, so that the two species are evidently distinct. This is rather surprising, as the exactly parallel difference in coloration between the African *C. tigripes* and its variety *fuscus* is not accompanied by any genital distinction, nor, as a matter of fact, can I detect any difference between the male genitalia of *C. tigripes* and *C. concolor*, although there is a constant difference in the neuration of the females. The specimens recorded by Theobald from Queensland as *C. tigripes* are really *C. halifaxii*, while those he has noted from various Oriental localities must be either this species or *C. concolor*. Both may, and generally do, have the femora distinctly spotted.

37. *Culex fuscocephalus*, Theo.

Culex fuscocephalus, Theo., Mon. Cul. iv, p. 420 (1907).

(?) *Culex minor*, Theo., Rec. Ind. Mus. ii, p. 298 (1908).

Culex taytayensis, Banks, Phil. J. Sci. iv, p. 545 (1909).

Culex luteola, Theo., Mon. Cul. v, p. 378 (1910).

I have compared the types of *C. fuscocephalus* and *C. luteola* with paratypes of *C. taytayensis* sent me by Mr. Banks, and find they are undoubtedly the same. The abdominal tergites are pale-scaled at their edges, the pale patch extending along the whole of the side of each segment, but broadening out somewhat towards the apex. The description of the abdomen of *C. minor* does not quite fit in with this, and as I have not yet examined a specimen this name is only included as a doubtful synonym.

CULICIOMYIA, Theo.

Mon. Cul. iv, p. 227 (1907).

This is quite a well-marked group, as apart from the scale characters which distinguish it from true *Culex*, there are certain characters of the male genitalia which seem to be peculiar to this group and common to all its members. It may therefore be justifiable to retain it as a distinct genus,

38. *Culiciomyia viridiventer* (Giles).

Culex viridiventer, Giles, J. Bombay Nat. Hist. Soc., xiii, p. 609 (May 1901).

Culex angulatus, Theo., Mon. Cul. ii, p. 324 (Nov. 1901).

Culex longifurcatus, Theo. (*nec* Becker), Rec. Ind. Mus. iv., p. 19 (1910).

Culex pseudolongifurcatus, Theo., Mon. Cul. v, p. 366 (1910).

All the types are in a good condition in the British Museum, and are unmistakably all of the same species. The row of scales on the male palpi is quite well marked in this and in the two following species.

39. *Culiciomyia pallidothorax* (Theo.).

Culex pallidothorax, Theo., J. Econ. Biol. i, p. 32 (1905).

Culex albopleura, Theo., Mon. Cul. iv, p. 456 (1907).

Culiciomyia annuloabdominalis, Theo., Mon. Cul. v, p. 236 (1910).

The types of *C. pallidothorax* and *C. albopleura* are in the British Museum in sufficiently good condition for comparison. *C. annuloabdominalis* is unrepresented in the British Museum, but I have no doubt at all as to its identity. Theobald states in each case that the species may be distinguished from *C. fatigans* or *C. pipiens* by the more uniformly fawn-coloured thorax, but characteristically omits to compare *C. annuloabdominalis* or *C. albopleura* either with *C. pallidothorax* or with one another.

40. *Culiciomyia fusca* (Theo.).

Trichorhynchus fuscus, Theo., J. Bombay Nat. Hist. Soc. xvi, p. 240 (1905).

Culiciomyia inornata, Theo., Mon. Cul. iv, p. 227 (1907).

The above synonymy has already been referred to incidentally (Bull. Ent. Res. iii, p. 33, May 1912), but it is perhaps as well to restate it definitely.

41. *Culiciomyia minutissima*, Theo.

Culiciomyia minutissima, Theo., Mon. Cul. iv, p. 235 (1907).

Culiciomyia nigerrima, Theo., Mon. Cul. v, p. 233 (1910).

Melanoconion juxtapallidiceps, Theo., Mon. Cul. v, p. 456 (1910).

I have compared the types, which are in fairly good condition in the British Museum. The species may not be a true *Culiciomyia*, as the head scaling looks rather more like that of *Lophoceratomyia*; the male remains unknown.

LOPHOCERATOMYIA, Theo.

Ann. Mus. Nat. Hung. iii, p. 93 (1905).

Philodendromyia, Theo., Mon. Cul. iv, p. 623 (1907).

42. *Lophoceratomyia fraudatrix*, Theo.

Lophoceratomyia fraudatrix, Theo., Ann. Mus. Nat. Hung. iii, p. 93 (1905).

Lophoceratomyia variata, Leic., Cul. of Malaya, p. 121 (1908).

Paratypes of *L. fraudatrix* from the Hungarian Museum have been compared with a series of *L. variata* in the British Museum. There are some slight errors

in Leicester's description of this species (and of some others in the genus) which will be called attention to in a future paper. Meanwhile it may be noted that the curious structures on the antennae of the males evidently afford good specific characters in this group, and that in comparing specimens particular attention has been given to them.

42A. *Lophoceratomyia rubithoracis*, Leic.

Lophoceratomyia rubithoracis, Leic., Cul. of Malaya, p. 119 (1908).

Oculiomyia fulleri, Ludlow, Can. Ent. xli, p. 97 (1909).

Miss Ludlow has kindly sent me specimens of both sexes of her *O. fulleri*, and I have found them specifically identical with Leicester's co-types.

43. *Lophoceratomyia barkeri* (Theo.).

Philodendromyia barkeri, Theo., Mon. Cul. iv, p. 623 (1907).

Lophoceratomyia sylvestris, Leic., Cul. of Malaya, p. 125 (1908).

Theobald's *P. barkeri* was said to be described from two males, but although the single specimen in the British Museum has now lost its abdomen it is perfectly obvious that it is a female of the *Culex* group, and it is quite as evident that it is one of Theobald's specimens. It was simply the mistake as to sex which caused Theobald to erect a new genus for his insect. From certain peculiarities of the wing-scales, I judge *P. barkeri* to belong to the group *Lophoceratomyia*, and can see nothing to separate it from Leicester's *L. sylvestris*, though in the absence of a male it is practically impossible to distinguish some of the species. It seems best when possible to assign such names as *P. barkeri* to some recognised species, rather than leave them as mere catalogue names.

44. *Lophoceratomyia mammilifer*, Leic.

Lophoceratomyia mammilifer, Leic., Cul. of Malaya, p. 128 (1908).

Lophoceratomyia bicornuta, Theo., Rec. Ind. Mus. iv., p. 25 (1910).

Theobald gives quite good figures of the male antennae, which make *L. bicornuta* easily recognisable as the same as *L. mammilifer*.

45. *Lophoceratomyia brevivalpus*, Theo.

Lophoceratomyia brevivalpus, Theo., Ann. Mus. Nat. Hung. iii, p. 96 (1905).

Lophoceratomyia eminentia, Leic., Cul. of Malaya, p. 131 (1908).

Leicester states that *L. eminentia* differs from *L. brevivalpus* "in the absence of the mammiliform projection on the basal joint of the antenna, the untoothed mid ungues, and the golden scales on the sixth antennal joint." But (1) Leicester's type distinctly shows a blunt prominence on the inner side of the basal joint of the antennae, as figured by Theobald; (2) the larger claw of the mid legs of both specimens is untoothed, and the presence or absence of a tooth on the smaller claw may not be a specific character; (3) although Theobald does not describe the antennae in detail he gives a fairly good figure which shows that their structure is really exactly the same as in Leicester's type. I have therefore no hesitation in adopting the above-quoted synonymy.

CYATHOMYIA, Meij.

Ann. Jard. Bot. Buitenzorg, ser. 2, supp. iii, p. 921 (June 1910).

46. *Cyathomyia brevipalpis* (Giles).

Stegomyia brevipalpis, Giles, Gnats, Ed. ii, p. 384 (1902).

Melanocnion uniformis, Leic., Cul. of Malaya, p. 136 (1908).

An examination of the types (I have mounted the male genitalia of both) shows that these species are synonymous. To judge from the description, de Meijere's *C. jenseni* is a distinct species. Leicester attributes the first publication of *M. uniformis* to Theobald, but I have been unable to trace any earlier reference to it in literature.

MICRÆEDES, Coq.

Proc. Ent. Soc. Wash. vii, p. 185 (1905).

Acalloemyia, Leic., Cul. of Malaya, p. 194 (1908).

47. *Micræedes obscurus* (Leic.).

Acalloemyia obscurus, Leic., Cul. of Malaya, p. 194 (1908).

An examination of the male genitalia shows that this species belongs to the *Culex* group, and the short male palpi place it in *Micræedes*.

Leicester's *Aedes malayi* also belongs to this genus and lies extremely close to *M. nigrescens* (Theo.); there are however some slight differences in coloration and in the male genitalia.

(d) *Anomalous and Primitive genera.*

(Under this heading are included all those genera of CULICINI which will not fit into any of the three foregoing groups.* With the exception of *Uranotaenia*, they are all small genera and have similar male genitalia of a simple type, though this fact alone may not indicate any close relationship between them.)

THEOBALDIA, N.-L.

C. R. Soc. Biol., 1902, p. 1331.

48. *Theobaldia glaphyoptera* (Schiner).

Culex glaphyopterus, Schiner, Fauna Austriaca, Dipt., ii, p. 628 (1864).

Pseudotheobaldia niveitueniata, Theo., Mon. Cul. iv, p. 272 (1907).

I think there can be very little doubt that these two are the same species. A south European species is quite likely to occur in northern India.

FICALBIA, Theo.

Mon. Cul. iii., p. 296 (1903).

Etorleptomyia, Theo., First Rept. Wellc Lab., p. 71 (1904).

Ingramia, Edw., Bull. Ent. Res. iii, p. 43 (1912).

I have compared the male genitalia of *Ficalbia minima*, Theo., with those of *Etorleptomyia completiva*, Leic., and *Ingramia malfeyti* (Newst.) and find that

* Besides the ones specially mentioned, the genera *Mimomyia*, *Aedomyia* and *Leptosomatomyia* occur in this section.

they are all of the same type, while in all these species the proboscis is strongly swollen apically in the male and distinctly so in the female; it therefore seems justifiable to regard them all as belonging to one genus, in spite of the considerable differences in the male palpi. This course will at least call attention to their evident relationships, and no harm will be done even if the genera *Etorleptiomyia* and *Ingramia* be subsequently revived.

49. **Ficalbia minima**, Theo.

Uranotaenia minima, Theo., Mon. Cul. ii, p. 262 (1901).

Mimomyia minuta, Theo., Rec. Ind. Mus. ii, p. 301 (1908).

The description of *M. minuta* agrees very well with the type of *F. minima*, but I have not seen a specimen of the former. This species is hereby designated as the type of the genus *Ficalbia*, as Theobald did not select a type when describing the genus. The other species which was originally included (*F. simplex*, Theo.), does not belong here; it is a true *Aedes*.

50. **Ficalbia luzonensis** (Ludlow).

Oreillia luzonensis, Ludlow, Can. Ent. xxxvii, p. 101 (1905).

Etorleptiomyia luzonensis, Ludlow, Can. Ent. xxxviii, p. 185 (1906).

Etorleptiomyia completiva, Leic., Cul. of Malaya, p. 178 (1908).

Some slight discrepancies in the descriptions notwithstanding, I think there is very little doubt that *E. luzonensis* and *E. completiva* represent the two sexes of the same species.

URANOTAENIA, Arrib.

Rev. Mus. La Plata, ii, p. 163 (1891).

51. **Uranotaenia alboannulata** (Theo.).

Anisocheleomyia alboannulata, Theo., Entom. xxxviii, p. 54 (1905).

Uranotaenia trilineata, Leic., Cul. of Malaya, p. 204 (1908).

I have compared the types, but the species is so elaborately marked that even without this final test their specific identity would be unmistakable.

52. **Uranotaenia nivipes** (Theo.).

Anisocheleomyia nivipes, Theo., Entom. xxxviii, p. 53 (1905).

Pseudouranotaenia triangulata, Ludlow, Can. Ent. xl, p. 331 (1908).

Uranotaenia nivea, Leic., Cul. of Malaya, p. 211 (1908).

Types of *A. nivipes* and *U. nivea* compared with one another and with specimens of *P. triangulata* named by Dr. Ludlow.

53. **Uranotaenia atra**, Theo.

Uranotaenia atra, Theo., Ann. Mus. Nat. Hung. iii, p. 114 (1905).

Uranotaenia ceylonica, Theo., Mon. Cul. v, p. 503 (1910).

I have examined the type of *U. atra*, among other species, through the kindness of Dr. K. Kertész of the Hungarian Museum. It is mouldy and rubbed and scarcely recognisable, but I could see nothing at all to separate it from *U. ceylonica*, and so the latter name may as well be rejected.

54. *Uranotaenia testacea*, Theo.

Uranotaenia testacea, Theo., Ann. Mus. Nat. Hung. iii, p. 113 (1905).

Uranotaenia falcipes, Banks, Phil. J. Sci. i, p. 1004 (1906).

Uranotaenia unilineata, Leic., Cul. of Malaya, p. 220 (1908).

The British Museum contains an example of *U. testacea* from Burma, named by Theobald, nine cotypes of Leicester's *U. unilineata*, and a paratype (?) of *U. falcipes* from the Philippine Islands named by Banks. In the last-named specimen the pleurae are not unscaled as stated in Banks' description, but have the usual line of blue scales distinctly present.

55. *Uranotaenia leicesteri*, nom. n.

Uranotaenia fusca, Leic., Cul. of Malaya, p. 227 (1908) (nec *U. fusca*, Theo., 1907).

This species is quite distinct from Theobald's *U. fusca*, and hence requires renaming.

ORTHOPODOMYIA, Theo.

Entom. xxxvii, p. 236 (1904).

Bancroftia, Lutz, Mosq. do Brazil (1904).

The species of *Orthopodomyia* and *Bancroftia* are identical in all structural details, and differ from practically all other CULICIDAE in the relative lengths of the front tibial and tarsal joints. I do not know the exact date of Lutz's work, and so use Theobald's name for the genus at present.

56. *Orthopodomyia anopheloides* (Giles).

Mansonia anopheloides, Giles, J. Trop. Med. vi, p. 315 (1903).

Orthopodomyia albipes var. *nigritarsis*, Leic., Cul. of Malaya, p. 177 (1908).

Orthopodomyia maculata, Theo., Rec. Ind. Mus. iv, p. 29 (1910).

I very much doubt whether *O. albipes* and *O. maculipes* are anything more than colour varieties of *O. anopheloides*, while as to the synonymy given above there can be no question. The types of *O. anopheloides* are in the British Museum. The Ceylon specimens referred by Mr. Theobald to *O. maculipes* are really only *O. anopheloides*. The three forms seem only distinguishable by the presence or absence of small black rings on the third and fourth joints of the hind tarsi.

Tribe 4. **Sabethini.**

The genera *Harpagomyia*, *Hodgesia*, *Topomyia*, *Zeugomyia*, *Mimeteomyia*, *Rachisoura*, and *Rachionotomyia* must be placed in this tribe, although none of their species possess postnotal setae. Their true relationship is shown in various ways, e.g., the shortness of the hind tibiae, the structure of the male genitalia, the slightly keeled appearance of the postnotum, and the general appearance of the scaly covering; the species usually have metallic scales on the front part of the head. A reduction in the number of these genera will probably have to be made.

HARPAGOMYIA, Meij.

Tijd. v. Ent. lii, p. 165 (1909).

57. *Harpagomyia genurostris* (Leic.).*Malaya genurostris*, Leic., Cul. of Malaya, p. 258 (1908).*Harpagomyia splendens*, Meij., Tijd. v. Ent. lii, p. 165 (1909).*Harpagomyia coeruleovittata*, Ludlow, Psyche, xviii, p. 131 (1911).

Dr. Ludlow suggested that her species might be distinguished from *H. splendens* by the scaling of the scutellum, but specimens in the British Museum from Batavia agree with her description, as also does Leicester's type. The African *H. trichorostris* is very similar, but differs in having a dark clypeus, that of the Oriental species being yellowish with a silvery pubescence.

HODGESIA, Theo.

J. Trop. Med. vii, p. 17 (1904).

58. *Hodgesia quasisanguinae*, Leic.*Hodgesia quasisanguinae*, Leic., Cul. of Malaya, p. 230 (1908).*Hodgesia niveocaputis*, Ludlow, Psyche, xviii, p. 130 (1911).

The descriptions correspond.

TOPOMYIA, Leic.

Cul. of Malaya, p. 238 (1908).

Pseudograhamia, Theo., Rec. Ind. Mus., iv, p. 26 (1910).59. *Topomyia argenteoventralis*, Leic.*Topomyia argenteoventralis*, Leic., Cul. of Malaya, p. 240 (1908).*Pseudograhamia aureoventer*, Theo., Rec. Ind. Mus. iv, p. 27 (1910).

I have compared the types and find them identical.

RACHIONOTOMYIA, Theo.

J. Bombay Nat. Hist. Soc. xvi, p. 243 (1904).

Polylepidomyia, Theo., Ann. Mus. Nat. Hung. iii, p. 118 (1905).*Colonemyia*, Leic., Cul. of Malaya, p. 233 (1908).*Skeiromyia*, Leic., Cul. of Malaya, p. 248 (1908).*Squamomyia*, Theo., Rec. Ind. Mus. iv, p. 28 (1910).

This genus may be defined as follows: Postnotum without setae, but with a distinct median longitudinal ridge; hind tibiae distinctly shorter than either the front or middle ones; prothoracic lobes well separated; eyes touching for a long space; proboscis slender, thin at the tip, longer than the abdomen; male and female palpi short; male with the antennae sub-plumose, the claws of the fore and mid legs unequal, the genitalia of Sabethine type. Leicester says that the larva is very hairy and "has a curious hooked chitinous process inserted on the

thorax at the posterior angle." *Rachionotomyia* somewhat resembles *Topomyia*, but in that genus the proboscis is shorter than the abdomen and slightly swollen at the tip, while the secondary male characters (plumose antennae and differentiation in the claws) are not developed. It is unfortunate that the name *Rachionotomyia* is the oldest one applicable to this genus, as it was mainly founded on a misconception (see note under *R. aranoides*).

60. *Rachionotomyia nitidiventer* (Giles).

Uranotaenia nitidiventer, Giles, J. Trop. Med. vii, p. 368 (1904).

Runchomyia philippinensis, Giles, J. Trop. Med. vii, p. 368 (1904).

This synonymy has already been given, but the species has not till now been referred to this genus, and the writer's statement (Ann. Mag. Nat. Hist., July 1911, p. 69) that *Phoniomyia bimaculipes* is another synonym is incorrect. *P. bimaculipes* belongs to this genus, but differs from *R. nitidiventer* in having longer palpi.

61. *Rachionotomyia aranoides* (Theo.).

Wyeomyia aranoides, Theo., Mon. Cul. ii, p. 274 (1901).

Rachionotomyia ceylonensis, Theo., J. Bombay Nat. Hist. Soc. xvi, p. 248 (1904).

Skeiromyia fusca, Leic., Cul. of Malaya, p. 248 (1908).

Squamomyia inornata, Theo., Rec. Ind. Mus. iv, p. 28 (1910).

I have no doubt about the above synonymy, as I have examined all the types except that of *S. inornata*, and the species is a very distinct one owing to the scaly clypeus. The type of *W. aranoides* has the integument of the mesonotum of a darker colour than usual, but does not differ in any other way. Mr. C. S. Banks has placed the following common-sense note on the type of *R. ceylonensis* in the British Museum Collection: "It appears to me that this genus has been based upon a specimen which at some time, when soft, was so much mutilated that the contents of the body have exuded through the suture between the mesonotum and the scutellum or the scutellum and the metanotum and then have hardened, catching up small scales from the body surface, thus, when hardened, having somewhat the appearance of being covered with scattered scales. At any rate, the specimen is so much of a monstrosity that it is in no sense wise to use it as the type of a species, much less of a genus.—C. S. Banks, 21 Sept. 1908." Mr. Banks is evidently quite correct in his interpretation of the specimen.

62. *Rachionotomyia affinis*, nom. n.

Phoniomyia coeruleocephala, Theo., Mon. Cul. v, p. 577 (1910),

nec Colonemyia coeruleocephala, Leic., Cul. of Malaya, p. 233 (1908).

This may possibly be a variety of *R. aranoides* (Theo.) or *R. argentiventris* (Theo.); it differs from both in having the head bright blue in front view, from the former in having no scales on the clypeus, and from the latter in having brown instead of white scales on the prothoracic lobes.

Subfam. 2. CHAOBORINAE.

CHAOBORUS, Licht.

Arch. Zool. (Wiedemann's) i, p. 174 (1800).

63. *Chaoborus manilensis*, Schin.*Corethra manilensis*, Schiner, Novara Reise, Dipt., p. 30 (1868).*Corethra asiatica*, Giles, J. Bombay Nat. Hist. Soc. xiii, p. 610 (1901).

This species is the only common *Chaoborus* in the Oriental region, and is doubtless the one described by Schiner.
